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MESSAGE:

In re Application No.: 10/726,357, Filed: December 3, 2003
First Named Inventor: SKOOG, et al.
Docket No.: 07783-0086

Please deliver to Examiner TUROCY, Art Unit 1762

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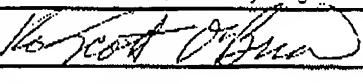
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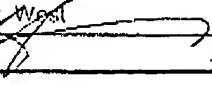
TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>		Application Number	10/726,367
		Filing Date	December 3, 2003
		First Named Inventor	SKOOG, et al.
		Art Unit	1762
		Examiner Name	TUROCY
Total Number of Pages in This Submission	19	Attorney Docket Number	13DV-13672 (07783-0086-CIP1)

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This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Application No. 10/726,357
Atty. Docket No. 13DV-13672 (07783-0086-CIP1)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: SKOOG et al. :
Application No.: 10/726,357 : Group Art Unit: 1762
Filed: December 3, 2003 : Examiner: David P. TUROCY
:

For: SPRAYABLE NOBLE METAL COATING FOR HIGH TEMPERATURE USE ON
CERAMIC AND SMOOTHCOAT COATED AIRCRAFT ENGINE PARTS

REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
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Sir:

This Reply Brief is being filed pursuant to 37 C.F.R. §41.41(a) within two months from the date of the Examiner's Answer.

Appellants hereby authorize any charges necessary for consideration of this appeal to be charged to Deposit Account No. 50-1059.

1. ***REAL PARTY IN INTEREST***

As in the Revised Appeal Brief filed on October 21, 2005, the real party of interest in this pending application is General Electric Company, One River Road, Schenectady, New York, 12345, Assignee of inventors' interest, which assignment has been duly recorded in the United States Patent and Trademark Office.

2. ***RELATED APPEALS AND INTERFERENCES***

As in the Revised Appeal Brief filed on October 21, 2005, Application 10/726,361 is co-pending with the present application. It is unknown whether the pending appeal in the current

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application may directly affect or be directly affected by or have a bearing on prosecution of the co-pending application.

3. *STATUS OF CLAIMS*

As in the Revised Appeal Brief filed on October 21, 2005, claims 1-22 are under final rejection and are appealed. An unmarked copy of the appealed claims in response to the First Office Action dated January 4, 2005, which is the last form acted on the Examiner, is attached hereto in Appendix I.

4. *STATUS OF AMENDMENTS*

As in the Revised Appeal Brief filed on October 21, 2005, Appellants' Second Response under 37 CFR §1.116 dated June 6, 2005 in response to a Final Office Action dated March 30, 2005 has not been acted upon by the Examiner. The Examiner refused entry of amendments to independent claims 1 and 16 submitted by Appellants in a Response under 37 C.F.R. §1.116 dated June 6, 2005, stating in an Advisory Action dated June 21, 2005 that the proposed amendments raised new issues that would require further consideration and/or search. However, the Examiner provided no further explanation as to why the amendments would require further consideration and/or search. The Examiner alleged to have performed a cursory search for support of the added limitations in the present application without success. As indicated in the Revised Appeal Brief, Appellants would have been pleased to direct the Examiner to paragraph 14 of the present application. Further, Appellants assert that the amended claims place the claims in better condition for allowance.

5. *SUMMARY OF CLAIMED SUBJECT MATTER*

Independent claim 1 recites a method of applying a heat-rejection coating, comprising the steps of: supplying a component of a gas turbine engine having an outer ceramic surface, step 40 (see e.g., Specification at page 7, line 20 to page 8 line 4 and Fig. 3); providing a reflective-coating mixture, wherein the reflective-coating mixture comprises a metallic pigment and an evaporable carrier, step 54 (see e.g., Specification at page 8, lines 5-27 and Fig. 3); applying the mixture to the outer ceramic surface by a method selected from the group consisting of air-assisted spraying, airless

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spraying, brushing, and decal transfer, step 54 (see e.g., Specification at page 8, line 5 to page 9, line 19 and Fig. 3); and firing the component having the reflective-coating mixture thereon to form a reflective coating on the ceramic component, step 56 (see e.g., Specification at page 9, lines 20-25 and Fig. 3).

Independent claim 16 recites a method of applying a heat-rejection coating, comprising the steps of: supplying a component of a gas turbine engine, the component having a ceramic surface, step 40 (see e.g., Specification at page 10, lines 7-12 and Fig. 6); pre-treating the component surface to form a pre-treated component surface, step 42 (see e.g., Specification at page 10, line 12 to page 11, line 5 and Fig. 6); thereafter air-assisted spraying a reflective-coating mixture onto the pre-treated component surface, step 54 (see e.g., Specification at page 11, lines 6-7, Fig. 6, and page 9, lines 1-18 and Fig. 5); the reflective-coating mixture comprising a metallic pigment and a reflective-coating-mixture carrier (see e.g., Specification at page 11, line 21 to page 12, line 4); and firing the component having the coating mixture thereon, step 56 (see e.g., Specification at page 12, lines 10-15 and Fig. 6).

Dependent claim 2 recites the method of claim 1, wherein the step of applying the reflective-coating mixture includes applying the reflective-coating mixture by air-assisted spraying, step 54 (see e.g., Specification at page 8, line 5 to page 9, line 19).

Dependent claim 9 recites the method of claim 6, wherein the step of applying the ceramic barrier coating further includes the step of air-assisted spraying the ceramic-barrier-coating mixture onto the component, and drying the ceramic-barrier-coating mixture (see e.g., Specification at page 9, lines 18-19).

Dependent claim 10 recites the method of claim 1 wherein the provided reflective-coating mixture further comprises a noble metal encapsulator (see e.g., Specification at page 8, lines 22-27).

Dependent claim 11 recites the method of claim 1 wherein the provided reflective coating mixture contains a predetermined amount of filler (see e.g., Specification at page 12, lines 5-9).

Dependent claim 12 recites the method of claim 11 wherein the filler material is glass or ceramic materials (see e.g., Specification at page 12, lines 5-9).

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Dependent claim 13 recites the method of claim 12 wherein the filler comprises up to about 25 percent of the reflective mixture by weight (see e.g., Specification at page 12, lines 5-9).

Dependent claim 18 recites the method of claim 17, wherein the step of applying the ceramic coating further includes the steps of air-assisted spraying a ceramic-barrier-coating mixture onto the component, and drying the ceramic-barrier-coating mixture (see e.g., Specification at page 10, line 20 to page 11, line 11).

Dependent claim 19 recites the method of claim 16 wherein the step of spraying reflective-coating mixture further includes spraying a mixture comprising a noble metal encapsulator (see e.g., Specification at page 8, lines 22-27).

Dependent claim 20 recites the method of claim 16 wherein the step of spraying the reflective coating mixture includes spraying a mixture that includes a predetermined amount of filler (see e.g., Specification at page 12, lines 5-9).

Dependent claim 21 recites the method of claim 20 wherein the filler material is selected from the group consisting of glass and ceramic materials (see e.g., Specification at page 12, lines 5-9).

Dependent claim 22 recites the method of claim 21 wherein the filler comprises up to about 25 percent of the reflective mixture by weight (see e.g., Specification at page 12, lines 5-9).

6. **GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- 1.) [Indicated as withdrawn in Examiner's Answer] Whether claims 1-5 are unpatentable under the judicially created doctrine of obviousness-type double patenting over Skoog et al. (U.S. Patent No. 6,720,034), hereinafter "Skoog."
- 2.) Whether claims 1-9 and 16-18 are unpatentable under the judicially created doctrine of obviousness-type double patenting over Skoog, in view of Rigney et al. (U.S. Patent No. 6,455,167), hereinafter "Rigney."

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- 3.) Whether claims 1-6 and 8 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj et al. (U.S. Patent No. 5,545,437), hereinafter "Nagaraj", in view of Klabunde (U.S. Patent No. 4,877,647) hereinafter "Klabunde," and further in view of Kirk-Othmer and Rigney.
- 4.) Whether claim 7 is unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 6, and further in view of Vakil (U.S. Patent No. 5,407,705) hereinafter "Vakil."
- 5.) Whether claim 9 is unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 6, and further in view of Eppler.
- 6.) Whether claim 10 is unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 1, and further in view of Teele (U.S. Patent No. 5,922,403) hereinafter "Teele."
- 7.) Whether claims 11-13 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 1, and further in view of Akechi (Japanese Publication No. JP 60081892A) hereinafter "Akechi."
- 8.) Whether claims 14-15 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 1, and further in view of Skoog.
- 9.) Whether claims 16-22 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer, Rigney, Eppler, Teele, Akechi and further in view of Demaray (U.S. Patent No. 4,676,994) hereinafter "Demaray."

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7. ***ARGUMENT***

A. Discussion of Ground 1.

Ground 1 - Whether claims 1-5 are unpatentable under the judicially created doctrine of obviousness-type double patenting over Skoog et al. (U.S. Patent No. 6,720,034), hereinafter "Skoog."

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

The Examiner states in Response to Argument bridging pages 13-14 of the Examiner's Answer:

The appellant has argued against the obvious type double patenting rejections over Skoog et al., stating the references fail to teach of supplying a component of a gas turbine engine having an outer ceramic surface and the references only teach of supplying a metallic component and then coating the metallic component with a ceramic. It remains the examiners position, while the component is supplied as metallic, after application of the ceramic coating, the component will have an outer ceramic surface, as required by the claim, and therefore a component with an outer ceramic surface is supplied.

Appellants maintain that claims 1-5 are nonobvious for the reasons contained in the Revised Appeal Brief filed on October 21, 2005.

The Examiner has withdrawn this rejection as indicated on page 3 of the Examiner's Answer in view of the terminal disclaimer filed on June 9, 2005. In view of this terminal disclaimer, Appellants note that Skoog cannot be applied as against the present invention.

B. Discussion of Ground 2.

Ground 2 - Whether claims 1-9 and 16-18 are unpatentable under the judicially created doctrine of obviousness-type double patenting over Skoog et al. (U.S. Patent No. 6,720,034), hereinafter "Skoog", in view of Rigney et al. (U.S. Patent No. 6,455,167), hereinafter "Rigney".

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Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Appellants further note that Skoog is disqualified from use in obviousness-type double patenting rejection per terminal disclaimer filed June 9, 2005 and cannot be applied against the present invention.

C. Discussion of Ground 3.

Ground 3 - Whether claims 1-6 and 8 are unpatentable under 35 U.S.C. § 103(a) over as being unpatentable over Nagaraj et al. (U.S. Patent No. 5,545,437), hereinafter "Nagaraj", in view of Klabunde (U.S. Patent No. 4,877,647) hereinafter "Klabunde", and further in view of Kirk-Othmer and Rigney.

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Further, the present invention specifically discloses that a "[The] ceramic barrier coating, where used, is preferably applied by air-assisted spraying a ceramic-barrier coating mixture onto the surfaces of the component; although airless and high volume low pressure (HVLP) methods have also been demonstrated, (see para [0013]) and that "[t]he reflective coating, similar to the ceramic coating, is preferably applied by air-assisted spraying, although airless, HVLP, brushing and decal transfer methods have been demonstrated." (see para [0014]) (emphasis added). In other words, in the present invention, the claimed techniques apply not only for the reflective coating, but also to the ceramic barrier coating. Nagaraj also discloses a ceramic barrier coating similar to the present invention, but Nagaraj disclosure appears limited to chemical and physical vapor deposition (CVD and PVD), electroplating and plasma spray techniques. The techniques disclosed by Nagaraj are specifically absent from claimed deposition methods in claim 1, for the reasons previously discussed. Since the present invention discloses applying both ceramic barrier coating and reflective coating by the claimed techniques of air-assisted spraying, airless spraying, brushing, and decal transfer, which each are applied with less expensive equipment and facility requirement than chemical and physical vapor deposition (CVD and PVD), not to mention the severely restricting size limitations associated with electroplating and plasma spray techniques, were the techniques of air-assisted spraying, airless

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spraying, brushing, and decal transfer actually "conventional deposition techniques" as referred to in Nagaraj, such techniques would have been identified in Nagaraj.

D. Discussion of Ground 4.

Ground 4 - Whether claim 7 is unpatentable under 35 U.S.C. § 103(a) as being unpatentable over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 6, and further in view of Vakil (U.S. Patent No. 5,407,705) hereinafter "Vakil."

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Appellants further assert that Nagaraj fails to teach the techniques claimed for the reasons set forth in the discussion of Nagaraj contained in Ground 3.

E. Discussion of Ground 5.

Ground 5 - Whether claim 9 is unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 6, and further in view of Eppler.

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Appellants further assert that Nagaraj fails to teach the techniques claimed for the reasons set forth in the discussion of Nagaraj contained in Grounds 3 and 4.

F. Discussion of Ground 6.

Ground 6 - Whether claim 10 is unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 6, and further in view of Tecle (U.S. Patent No. 5,922,403) hereinafter "Tecle".

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

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Appellants further assert that Nagaraj fails to teach the techniques claimed for the reasons set forth in the discussion of Nagaraj contained in Grounds 3, 4 and 5.

G. Discussion of Ground 7.

Ground 7 - Whether claims 11-13 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer and Rigney et al. as applied to claim 1, and further in view of Akechi (Japanese Publication No. JP 60081892A) hereinafter "Akechi."

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Appellants further assert that Nagaraj fails to teach the techniques claimed for the reasons set forth in the discussion of Nagaraj contained in Grounds 3, 4, 5 and 6.

Akechi, as understood, is based on the English translation of the Abstract, as well as a translation, identified as PTO: 2005-4648 performed by Akiko Smith with the United States Patent and Trademark Office dated July 5, 2005, which translation being made available to Appellants with Examiner's Answer. Akechi appears to be directed to a thick film paste of predetermined percentages by weight of precious metal powder, glass frit and an organic vehicle, as well as a small concentration of alumina, e.g., 500 ppm, for preparing a thermal print head. Apparently this film is printed on a substrate in a predetermined pattern. Apparently, the purpose of the composition of this paste permits a less thick application of the paste which prevents formation of bubbles during sintering that form bulges that deform or can otherwise ruin the film ultimately formed on a substrate from this paste.

Appellants note that Akechi, specifically as identified for use as a thermal printing head, is further supported by the full translation, and is not in the field of Appellants' endeavor. Further, the problem solved by Akechi, i.e., bubble formation of a coating during sintering, is not pertinent to the particular problem with which Appellants are concerned, i.e., applying a reflective coating to a ceramic gas turbine component by techniques selected from the group consisting of air-assisted spraying, airless spraying, brushing, and decal transfer. As such, according to *In re Oetiker*, which

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the Examiner has so aptly cited on page 18 of the Examiner's Answer, Akechi is in fact nonanalogous art. The Examiner then attempts to apply Akechi against the present invention by noting that both the Akechi construction and the present invention use glass frits, although the present invention may make use of a concentration of glass frits that can exceed the concentration in Akechi by more than an order of magnitude. Therefore, Akechi is not properly combinable with the other references. As such, Appellants continue to respectfully disagree with the Examiner's position.

H. Discussion of Ground 8.

Ground 8 - Whether claims 14-15 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj in view of Klabunde and further in view of Kirk-Othmer and Rigney as applied to claim 1, and further in view of Skoog.

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Appellants further assert that Nagaraj fails to teach the techniques claimed for the reasons set forth in the discussion of Nagaraj contained in Grounds 3, 4, 5, 6 and 7.

I. Discussion of Ground 9.

Ground 9 - Whether claims 16-22 are unpatentable under 35 U.S.C. § 103(a) over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer, Rigney, Eppler, Teele, Akechi and further in view of Demaray (U.S. Patent No. 4,676,994) hereinafter "Demaray."

Appellants incorporate Arguments contained in the Revised Appeal Brief filed on October 21, 2005.

Appellants further assert that Nagaraj fails to teach the techniques claimed for the reasons set forth in the discussion of Nagaraj contained in Grounds 3, 4, 5, 6, 7 and 8.

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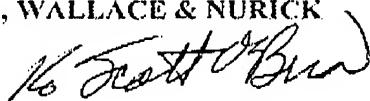
J. Conclusion

In view of the above, Appellants respectfully requests a favorable action on this pending Appeal and withdrawal of the outstanding rejections. As a result of the remarks presented herein, Appellants respectfully submit that claims 1-22 are not anticipated by, nor rendered obvious by Nagaraj, Klabunde, Kirk-Othmer, Rigney, Vakil, Eppler, Teele, Akechi, Skoog and Demaray or their combinations and thus, are in condition for allowance.

Respectfully submitted,

MCNEES, WALLACE & NURICK

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Dated: February 20, 2006

Attachments (Claims Appendix, Evidence Appendix,
and Related Proceedings Appendix)

Application No. 10/726,357
Atty. Docket No. 13DV-13672 (07783-0086-CIP1)

8. CLAIMS APPENDIX

Unmarked Copy of Claims as of first Office Action dated January 4, 2005, the last form acted on by the Examiner.

1. A method of applying a heat-rejection coating, comprising the steps of:
 - supplying a component of a gas turbine engine having an outer ceramic surface;
 - providing a reflective-coating mixture, wherein the reflective-coating mixture comprises a metallic pigment and an evaporable carrier;
 - applying the mixture to the outer ceramic surface by a method selected from the group consisting of air-assisted spraying, airless spraying, brushing, and decal transfer; and
 - firing the component having the reflective-coating mixture thereon to form a reflective coating on the ceramic component.
2. The method of claim 1, wherein the step of applying the reflective-coating mixture includes applying the reflective-coating mixture by air-assisted spraying.
3. The method of claim 1, wherein the step of providing the reflective-coating mixture includes providing the metallic pigment selected from the group consisting of platinum, gold, silver, rhodium, palladium, and alloys thereof.
4. The method of claim 1, wherein the step of providing the reflective-coating mixture includes providing an organic reflective-coating-mixture carrier.
5. The method of claim 1, wherein the step of applying the reflective-coating mixture includes a step of air-assisted spraying the reflective-coating mixture such that the reflective coating has an areal weight of from about 0.00275 to about 0.00475 grams per square inch of a surface to which it is applied.
6. The method of claim 1, further including an additional step, before the step of providing the reflective-coating mixture, of applying a ceramic thermal barrier coating over the component surface,

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and wherein the step of applying the reflective-coating mixture includes the step of applying the reflective-coating mixture onto the ceramic barrier coating applied to the component surface.

7. The method of claim 6, wherein the step of applying the ceramic barrier coating further includes applying a coating comprising a ceramic material selected from the group consisting of lanthanum and cerium.

8. The method of claim 6, wherein the step of applying the ceramic barrier coating further includes applying a ceramic-barrier-coating mixture to the surface such that the mixture has an areal weight of from about 0.00325 to about 0.00625 grams per square inch.

9. The method of claim 6, wherein the step of applying the ceramic barrier coating further includes the step of air-assisted spraying the ceramic-barrier-coating mixture onto the component, and drying the ceramic-barrier-coating mixture.

10. The method of claim 1 wherein the provided reflective-coating mixture further comprises a noble metal encapsulator.

11. The method of claim 1 wherein the provided reflective coating mixture contains a predetermined amount of filler.

12. The method of claim 11 wherein the filler material is glass or ceramic materials.

13. The method of claim 12 wherein the filler comprises up to about 25 percent of the reflective mixture by weight.

14. The method of claim 1 wherein the step of firing the component includes firing the component from about 1,100°F to about 2,150°F.

15. The method of claim 1 wherein the step of firing the component includes firing the component at about 1,650°F.

16. A method of applying a heat-rejection coating, comprising the steps of:
supplying a component of a gas turbine engine, the component having a ceramic surface;

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- pre-treating the component surface to form a pre-treated component surface; thereafter air-assisted spraying a reflective-coating mixture onto the pre-treated component surface, the reflective-coating mixture comprising a metallic pigment and a reflective-coating-mixture carrier; and
- firing the component having the coating mixture thereon.
17. The method of claim 16, further including the additional step of supplying a component of a gas turbine engine, and applying a ceramic coating over a surface of the component.
18. The method of claim 17, wherein the step of applying the ceramic coating further includes the steps of air-assisted spraying a ceramic-barrier-coating mixture onto the component, and drying the ceramic-barrier-coating mixture.
19. The method of claim 16 wherein the step of spraying reflective-coating mixture further includes spraying a mixture comprising a noble metal encapsulator.
20. The method of claim 16 wherein the step of spraying the reflective coating mixture includes spraying a mixture that includes a predetermined amount of filler.
21. The method of claim 20 wherein the filler material is selected from the group consisting of glass and ceramic materials.
22. The method of claim 21 wherein the filler comprises up to about 25 percent of the reflective mixture by weight.

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9. *EVIDENCE APPENDIX*

None.

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10. *RELATED PROCEEDINGS APPENDIX*

None.

PTO/SB/07 (09-04)

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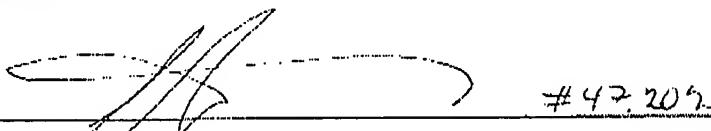
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